



2019-nCoV Literature Situation Report (Lit Rep)

April 01, 2020

The scientific literature on COVID-19 is rapidly evolving and these articles were selected for review based on their relevance to Washington State decision making around COVID-19 response efforts. Included in these Lit Reps are some manuscripts that have been made available online as pre-prints but have not yet undergone peer review. Please be aware of this when reviewing articles included in the Lit Reps.

Key Takeaways

- ***Cigarette smoke triggers the expansion of a subpopulation of respiratory epithelial cells that express the SARS-CoV-2 receptor ACE2, an explanation for why smokers develop severe COVID-19.***
- **A considerable increase in anxiety and depressive symptoms is expected among people (public health professionals and the general public) who do not have pre-existing mental health conditions, with some experiencing post-traumatic stress disorder in due course during the COVID-19 pandemic.**
- **The current distribution of the epidemic infers that SARS-CoV-2 does not behave as a seasonal respiratory virus and negates the speculation that the infection is temperature dependent, and will decline in severity with the advent of warmer spring and summer temperatures.**
- **School closures may exacerbate the epidemic of childhood obesity and increase disparities in obesity risk in the US.**

Clinical Characteristics and Health Care Setting

- Smith and Sheltzer report that cigarette smoke triggers a protective expansion of mucus-secreting goblet cells and the expansion of a subpopulation of respiratory epithelial cells that express the SARS-CoV-2 receptor; Angiotensin Converting Enzyme 2 (ACE2). These results may partially explain why smokers are particularly likely to develop severe SARS-CoV-2 infections, and suggest that quitting smoking could lessen coronavirus susceptibility.
Smith and Sheltzer. (Mar 30, 2020). Cigarette smoke triggers the expansion of a subpopulation of respiratory epithelial cells that express the SARS-CoV-2 receptor ACE2. Pre-print downloaded Apr 1 from <https://doi.org/10.1101/2020.03.28.013672>
- Huang et al. conducted a limited study of 25 patients to assess correlations of the time from symptom onset to diagnosis and treatment with the time to disease resolution and CT scores from sequential chest CT examinations.
- They report that the time from symptom onset to diagnosis and treatment, had a positive correlation with the time to disease resolution and the highest CT score, and conclude that timely diagnosis and treatment are key to providing a better prognosis for patients with COVID-19.
Huang et al. (Mar 9 2020). Timely Diagnosis and Treatment Shortens the Time to Resolution of Coronavirus Disease (COVID-19) Pneumonia and Lowers the Highest and Last CT Scores from Sequential Chest CT. AJR. <https://doi.org/10.2214/AJR.20.23078>

Mental Health and Personal Impact

- Cullen et al. in their commentary anticipate a considerable increase in anxiety and depressive symptoms among people (public health professionals and the general public) who do not have pre-existing mental health conditions, with some experiencing post-traumatic stress disorder in due course during the COVID-19 pandemic. They provide a list of 4 recommendations government or states can do to help diminish or prevent future psychiatric morbidity.

Cullen et al. (Mar 30, 2020). Mental health in the Covid-19 pandemic. Pre-print downloaded Apr 1 from <https://doi.org/10.1093/qjmed/hcaa110>

- Castro and Perlis analyzed the narrative clinical notes on psychiatric symptoms to quantify the impact of increasing COVID-19 infection on extent of psychiatric assessment in emergency departments and outpatient settings across 5 Eastern Massachusetts hospitals. They report a sharp decline in notes referencing depression or anxiety in outpatients' settings and emergency departments in the face of increasing coronavirus infection in Massachusetts.
- They conclude that the presence of COVID-19 not only exacerbates psychiatric symptoms but also potentially interferes with health systems' capacity to manage such conditions.

Castro and Perlis. (Mar 30, 2020). Impact of COVID-19 on psychiatric assessment in emergency and outpatient settings measured using electronic health records. Pre-print downloaded Apr 1, from <https://doi.org/10.1101/2020.03.30.20048207>

Modelling and Prediction

- Jamil et al examined the relationship between the apparent exponential rate of SARSCoV-2 spread and the Basic Reproductive number of infection (R_0) and the average daily temperature across the globe and Chinese provinces. The current distribution of the epidemic infers that SARS-CoV-2 does not behave as a seasonal respiratory virus and negates the speculation that the infection is temperature dependent, and will decline in severity with the advent of warmer spring and summer temperatures.
- They found no evidence that spread rates will decline with temperatures above 20°C, an epidemiological factor to consider in warmer countries in the tropics with recent outbreaks.

Jamil et al. (Mar 29, 2020). No Evidence for Temperature-Dependence of the COVID-19 Epidemic. Pre-print downloaded Apr 1 from <https://doi.org/10.1101/2020.03.29.20046706>

Public Health Policy and Practice

- In the presence of unprecedented morbidity and mortality in long term care (LTC) facilities for the elders in Washington State, Gaur et al. highlight staffing and resource challenges, and discuss why LTC settings have the most notable burden of COVID-19 cases among all segments of the healthcare system.
- They provide a series of recommendations for state, local and hospital systems to minimize or prevent disease occurrence in LTC facilities. They also provide criteria for admissions of new or COVID-19 recovered seniors to these facilities.

Gaur et al. (Mar 30, 2020). Unprecedented Solutions for Extraordinary Times: Helping Long-Term Care Settings Deal with the COVID-19 Pandemic. Infection Control & Hospital Epidemiology. <https://doi.org/10.1017/ice.2020.98>

- Rundle et al. call attention to the pandemic's longer-term effect on children's health following school closures. They report this may exacerbate the epidemic of childhood obesity and increase disparities in obesity risk.

- The authors recommend innovative approaches to address food insecurity and increase physical activity within the constraints of social distancing or full stay at home orders.
Rundle et al. (Mar 30, 2020). COVID-19 Related School Closings and Risk of Weight Gain among Children. Obesity. <https://doi.org/10.1002/oby.22813>

Other Resources and Commentaries

- [Refugee and migrant health in the COVID-19 response – a commentary on their vulnerability to COVID-19](#) –The Lancet (Mar 2020)
- [Impacts of COVID-19 on vulnerable children in temporary accommodation in the UK](#) – The lancet (Mar 2020)